

# Logan and Albert Rivers Fish Habitat Enhancement Plan

2020–2035





# Contents

- 1. Introduction ..... 5
- 2. Strategic Fit ..... 6
- 3. Vision – Where do we want to be? ..... 9
- 4. Outcomes ..... 9
- 5. Where are we now? .....10
  - 5.1 Background Investigations .....10
  - 5.2 Riverine Habitat Expert Panel Outcomes .....16
- 6. Where are we going? .....19
- 7. Key Areas of Interest .....19
- 8. How are we going to get there? .....20
  - 8.1 Implementation Overview .....20
- 9. References .....23



# 1. Introduction

The waterways and rivers of the City of Logan play a fundamental role in lives of the city's residents, South East Queenslanders and the broader region's population. They are biodiversity hotspots, providing homes and habitat for many of Australia's and the world's most unique aquatic fauna species, including platypus (*Ornithorhynchus anatinus*), Mary River Cod (*Maccullochella mariensis*), freshwater turtles and unique species of rare freshwater fish.

Commercial and recreational fishing activities support local communities, local businesses and contribute to the broader regional economy.

Fish and fisheries are strong features of the South East Queensland lifestyle. Recreational fishing in both freshwater and saltwater are very popular pastimes and support a broad range of local businesses such as tackle shops, fuel stations providing supplies and charter fishing operations taking international visitors on adventures.

The Logan and Albert Rivers also support a dynamic local recreational fishing industry. Attracting people from across the region for its prime mud crabs, prawns, Mulloway (*Argyrosomus japonicus*), Mangrove jack (*Lutjanus argentimaculatus*) and King threadfin (*Polydactylus macrochir*) fisheries. It is also an easy spot to catch common species such as bream, whiting and flathead.

The Logan and Albert Rivers support a variety of inshore commercial fisheries and aquaculture activities, including prawn trawling and mud crab harvesting. Several aquaculture activities operate in the Logan River, particularly at the lower end where multiple prawn farms operate. Some of Australia's key inshore fisheries focus on species which are not recreational target species. The Sea mullet (*Mugil cephalus*) inshore fisheries and the Long-finned eel (*Anguilla reinhardtii*) fishery are key export industries supplying the local market and overseas markets in the Pacific, Asia and Europe regions.

Robust native fish and aquatic fauna populations play a key role in supporting the health of our waterways, reducing mosquito breeding, competing with pest fish and improving water quality. They fit into all trophic levels within aquatic ecosystems and if removed or substantially reduced can have flow on effects including increased pest species, reduced water quality and impaired ecosystem function. They are also important in controlling mosquitos and other water borne disease vectors.

The development of the Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035 is a key deliverable under the Logan Rivers and Wetlands Recovery Plan 2014–2024 which was developed following the Logan Waterway Summit held in 2011.

A key focus of the Logan Rivers and Wetlands Recovery Plan 2014–2024 is related to ensuring that the Logan and Albert Rivers are best able to support vibrant and functional ecosystems which are rich in animal and fish and which support the social and economic values associated with commercial and recreational fishing.

The Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035 has been developed to identify and prioritise key actions, guide delivery of on-ground works, support funding applications and build community knowledge and understanding of the values of Logan's diverse waterway systems.

## 2. Strategic Fit

Integrating with other legislation, programs and plans will ensure that the Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035 is effective, achieves multiple outcomes and aligns with Council’s long-term corporate outcomes and strategic vision, as outlined in Table 1 below.

**Table 1: Strategic alignment of the Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035**

| Strategic Document   | Strategic Level Link                   | Strategy   |
|--|--|--|
| <b>Logan City Council Corporate Plan 2017–2022</b>   | Corporate Plan Priority                | <p>Priority: Quality Lifestyles (QL)<br/>QL2 Neighbourhoods are welcoming, inclusive and safe.</p> <p>Priority: Green and Renewable (GR)<br/>GR1 A carbon neutral and green city.</p> <p>Priority: Next Generation Governance (NG)<br/>NG3 We use responsible governance and establish strategic relationships in the management of assets and the delivery of services to the city.</p> |
| <b>Logan Destination Management Plan 2018–2022</b>   | Logan City Council strategic document  | Enhancing tourism opportunities in the city.   |
| <b>South East Queensland Regional Plan (2009–2031)</b>   | Desired regional outcomes and policies | Measurable targets for the condition and extent of environment and natural resources.  |
| <b>South East Queensland (SEQ) Natural Resource Management (NRM) Plan (2009-2031)</b>                    | Desired regional outcomes and policies | Targets include maintaining and improving conservation status of native species and maintaining or increasing habitat for priority species.  |
| <b>Logan Rivers and Wetlands Recovery Plan 2014–2024</b>   | Vision and strategic priorities        | The Logan Rivers and Wetlands Recovery Plan 2014–2024 provides a strategic direction for the rediscovery and recovery of Logan’s rivers and wetlands with collaboration, community stewardship and integrated social, economic and environmental outcomes at its core.   |
| <b>Albert River Vision 2017–2067</b>   | Vision and strategic priorities        | A 50-year vision for the Albert River, with the vision of ensuring the river is an iconic city asset that is regionally celebrated for places of beauty and places of interest with recreational opportunities for everyone.   |
| <b>Queensland’s Ecotourism Plan (2013–2020)</b>  | Vision and strategic priorities        | Strategic priorities include facilitating investment into ecotourism products and embracing a partnership approach.  |
| <b>Animal Care and Protection Act 2001</b>   | Queensland State Legislation           | Legislation that promotes the responsible care and use of animals and protects animals from cruelty.   |
| <b>Planning Act 2016</b>   | Queensland State Legislation           | Requires local government to prepare planning schemes to manage growth and change in their local area.   |
| <b>Nature Conservation Act 1992 (NC Act) – Nature Conservation (Wildlife Management) Regulation 2006</b> | Queensland State Legislation           | All native animals and plants, including aquatic fauna and their habitat, are protected under the NC Act.  |

| Strategic Document   | Strategic Level Link   | Strategy   |
|--|--|--|
| <b>Vegetation Management Act 1999 (VM Act)</b>   | Queensland State Legislation   | Regulates clearing of certain native vegetation.   |
| <b>Environmental Protection Act 1994 (EP Act) – Environmental Protection Regulation 2008</b> | Queensland State Legislation   | The EP Act protects Queensland’s environment while allowing for development that improves quality of life, both now and in the future (ecologically sustainable development).                  |
| <b>The Queensland Plan</b>   | Vision and strategic priorities  | Vision: “We will be the greatest state in which to live, work and play, and guardian of a sustainable natural environment that inspires an active lifestyle and supports healthy communities”. |
| <b>Australia’s Native Vegetation Framework 2012</b>  | National framework to guide the ecologically sustainable management of native vegetation | Goals include increasing the national extent and connectivity of native vegetation and maintaining and improving the condition and function of native vegetation.                              |







## 3. Vision

The Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035 aims to provide a long-term strategic framework with the following vision:

**“Enhance the long-term diversity and abundance of native fish and other aquatic fauna in the Logan and Albert Rivers to protect the intrinsic value of the river ecosystem, restore river function, protect key species and support the economic and social values associated with fishing.”**

## 4. Outcomes

The Enhancement Plan aims to achieve this vision and deliver the following key strategic outcomes:

1. Improve waterway connectivity through the removal or mitigation of fish barriers in the Logan and Albert rivers and in their tributaries.
2. Improve in-stream habitat in terms of quality, quantity and connectivity.
3. Increase riparian habitat through enhancement and increase of riparian vegetation.
4. Improve water quality.
5. Recovery of priority aquatic species.
6. Increase community stewardship through enhanced awareness, support and understanding of fish habitat and aquatic species.

# 5. Where are we now?

## 5.1 Background Investigations

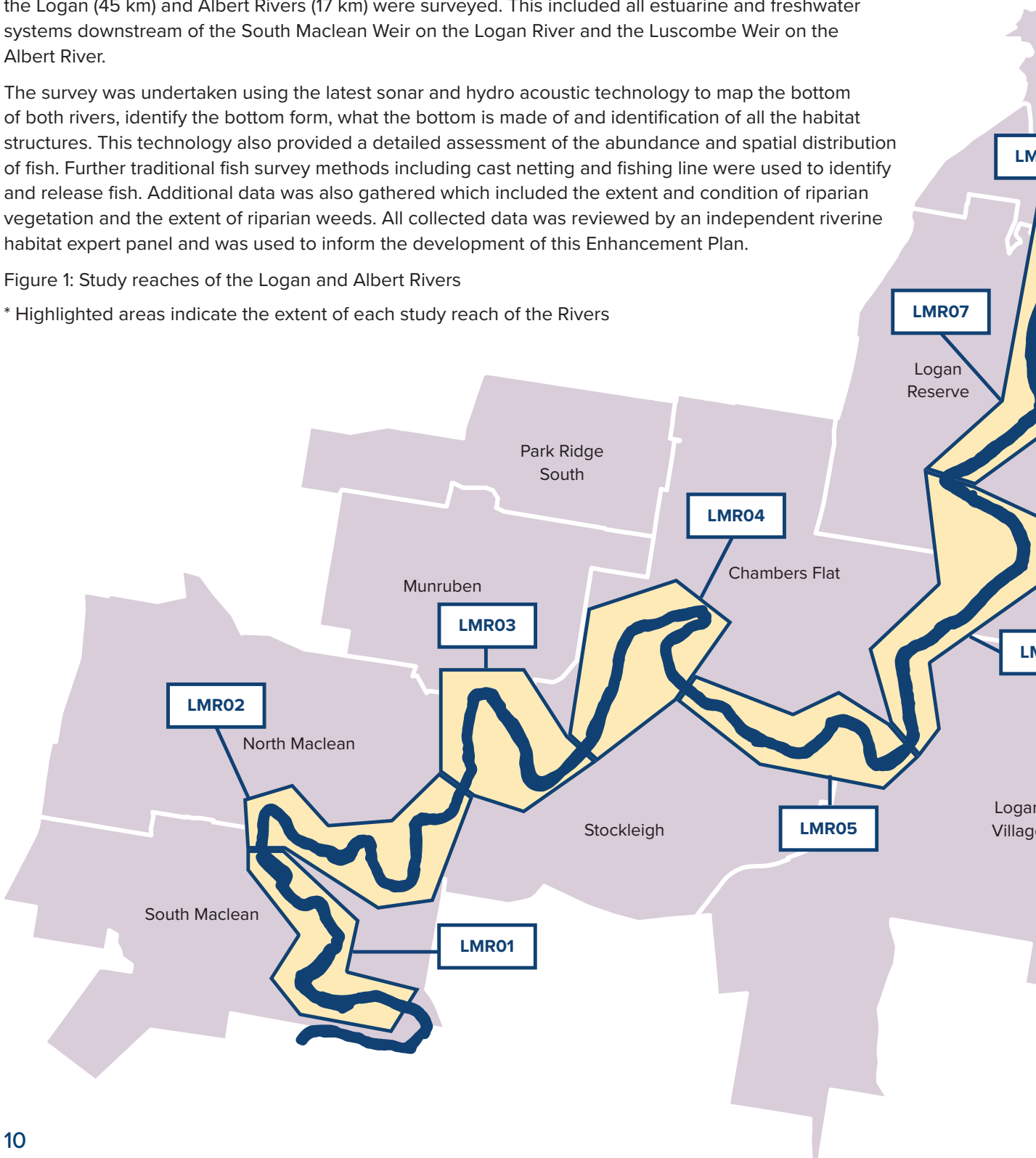
### River Survey

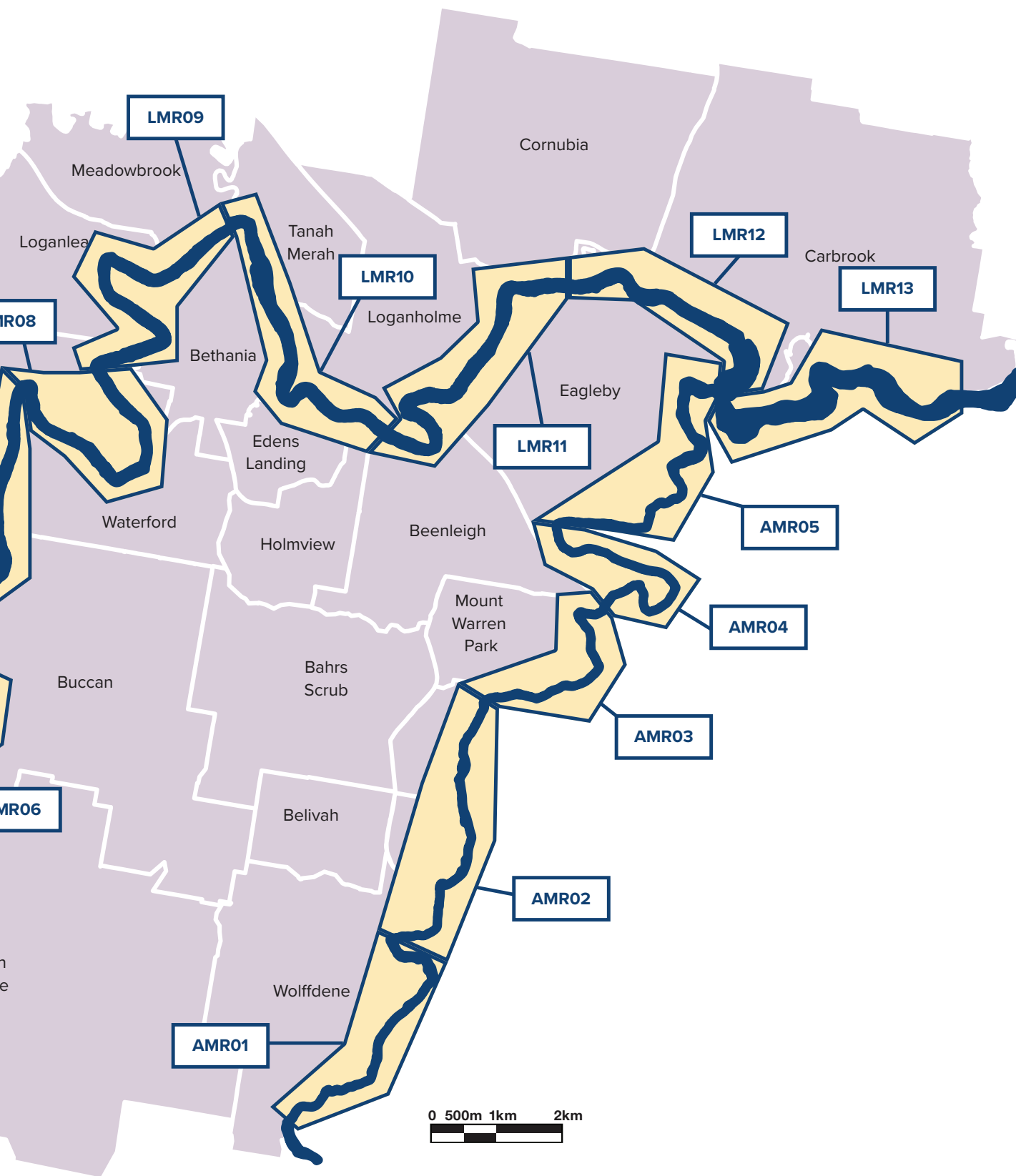
To inform the development of the Enhancement Plan, an extensive survey of the lower estuarine and freshwater sections of the Albert and Logan rivers was undertaken. Approximately 87 km in total of the Logan (45 km) and Albert Rivers (17 km) were surveyed. This included all estuarine and freshwater systems downstream of the South Maclean Weir on the Logan River and the Luscombe Weir on the Albert River.

The survey was undertaken using the latest sonar and hydro acoustic technology to map the bottom of both rivers, identify the bottom form, what the bottom is made of and identification of all the habitat structures. This technology also provided a detailed assessment of the abundance and spatial distribution of fish. Further traditional fish survey methods including cast netting and fishing line were used to identify and release fish. Additional data was also gathered which included the extent and condition of riparian vegetation and the extent of riparian weeds. All collected data was reviewed by an independent riverine habitat expert panel and was used to inform the development of this Enhancement Plan.

Figure 1: Study reaches of the Logan and Albert Rivers

\* Highlighted areas indicate the extent of each study reach of the Rivers





## Key highlights from the river survey include (taken from InfoFish Australia Pty Ltd, November 2019):

### Depth of the Rivers

- › Bathymetry of the Logan River ranged from <1 m deep to 16 m meters deep with the mean water depth increasing from upstream to downstream. The deepest waters were in management reaches LMR11 and LMR13, with approximately 13 m and 16 m recorded.
- › Bathymetry in the Albert River ranged from <1 m deep to 13 m meters deep with mean water depths increasing from upstream to downstream. The deepest waters were in management reaches AMR03 and AMR05, with approximately 10 m and 13 m recorded.
- › Water quality in the Logan River was variable between management reaches with electrical conductivity and turbidity displaying longitudinal trends. Longitudinal changes in conductivity is directly related to the tidal influence.
- › Water quality in the Albert River was less variable between management reaches than the Logan River however electrical conductivity and turbidity displayed similar longitudinal trends to the Logan River.

### Fish Habitat in the Rivers

- › A total of 1226 pieces of wood habitat in the Logan River and 585 in the Albert River were counted and classified. The most commonly occurring class in each river was single branches while the least common class was whole trees.
- › A total of 221 rock habitats in the Logan River, and 107 in the Albert River, were counted and classified. The most commonly occurring class in each river was rock bars while the least common class was single large rocks.
- › A total of 219 anthropogenic structures in the Logan River, and 149 in the Albert River, were counted and classified. The most commonly occurring class in each river was pilings. The least common class in the Logan River was sunken pontoons while the least common class in the Albert River was culvert crossings.



## Aquatic Species in the Rivers

- › A total of 496 fish (273 from the Logan River and 223 from the Albert River), representing 19 species, were caught and observed during the survey. Estuary glassfish dominated the sample from the Logan River, contributing 62.6% to the total sample, followed by tarpon (8.4%) and gold-spot mullet (7.7%). Estuary glassfish also dominated the sample from the Albert River, contributing 58.3% to the total sample, followed by bony bream (24.2%) and tarpon (6.7%).
- › Of the fish abundances recorded in the Logan and Albert rivers, most species (45.3%) in the Logan River were prey species, while the majority (65.8%) of the total count in the Albert River were predators. Scavenger and predator species contributions were similar in the Logan River with representing 29.6% and 25.1%, respectively while prey and scavenger species in the Albert River represented 24.8% and 9.4%, respectively.
- › A total of 143,325 fish were counted and size graded during side-looking surveys on the Logan River. Fish in the <100 mm and 100–200 mm size classes contributed the greatest percentages, 41.5% and 43.2% to the total sample. The bulk of the fish (91.3%) were occupying the top 4m of water with the remaining 8.7% occupying waters deeper than 4 m.
- › A total of 1,017 fish were counted and size graded during down-looking hole surveys on the Logan River. Fish in the <100 mm, 100–200 mm and >800 mm size classes contributed the greatest percentages, 19.2%, 16% and 14.9% to the total hole survey count. Most of the fish were occupying waters >1 m deep with a large percentage detected in waters >4 m deep.
- › A total of 9,679 fish were counted and size graded during bathymetry surveys of the Logan River. Fish in all size classes were detected during the survey with fish in the 100–200 mm size class contributing the greatest percentage (31.1%) to the total count, followed by fish in the <100 mm size class (24.6%) and 200–300 mm size class (12.9%). Most of the fish (94.8%) were occupying waters from 2 m deep and below.
- › A total of 117,541 fish were counted and size graded during side-looking biomass surveys on the Albert River. Fish from all size classes were detected. As observed in the Logan River surveys, fish in the smaller size classes (<100 mm, 100–200 mm, and 200–300 mm) dominated the total count, contributing 44.6%, 28.3% and 11.1% to the total count, respectively. Most fish (97.4%) appeared to be occupying waters <4 m deep however, the average depth of the Albert river is approximately 3 m. The bulk of the fish (54.7%) were occupying the 1–2 m depth range.
- › A total of 1,192 fish were counted and size graded in down-looking hole surveys on the Albert River. Fish in the <100 mm, 100–200 mm and >800 mm size classes contributed the greatest percentages, 23.2%, 14.3% and 9.6% to the total hole survey count. Most of the fish were occupying waters >1 m with the next greatest percentages (31.8% and 25.3%) located in waters 4–6 m deep or more.
- › A total of 5,309 fish were counted and size graded during bathymetry surveys of the Albert River. Fish in all size classes were detected during the survey (Figure 44, a) with fish in the <100 mm, 100–200 mm and 200–300 mm size class contributing more than half to the total sample (19.7%, 16.6% and 15.7%, respectively). All fish were occupying waters deeper than 1m with most fish located in 2–6 m depths.
- › The Logan/Albert system appears to have the capacity to support large numbers of smaller bodied forage species through to larger fish species, valued both recreationally and commercially.

## Water Quality

Healthy Land and Water (HLW) monitor the Logan and Albert Rivers as part of the broader Moreton Bay area annual report card monitoring program which provides an A (excellent) to F (fail) grading for each waterway within the greater Moreton Bay catchment. The grades are based on indicators for physical and chemical water quality, macroinvertebrates, fish and ecosystem processes. The 2019 Healthy Land and Water Report Card grades for each river were:

- › Albert River – Grade B;
- › Logan River – Grade C.

Water quality was also compared to the Logan River and Albert River environmental values (EV) and water quality objectives (WQO) (DERM 2010, a and b). A summary is outlined in Table 2 on page 14.

**Table 2: Water quality of the Logan and Albert Rivers compared to current Water Quality Objectives (WQO)**

| Parameter                     | Waterway Type  | Logan River WQO | Logan River Measurement | Albert River Measurement |
|-------------------------------|----------------|-----------------|-------------------------|--------------------------|
| Temperature                   | –              | –               | 16 – 19 deg             | 16 – 19 deg              |
| Dissolved oxygen % saturation | Middle estuary | 85 – 105%       | 60 to ~ 80%             | ~65 – 70%                |
|                               | Upper estuary  | 80 – 105%       | ~ 80%                   | ~65 – 70%                |
| pH                            | Middle estuary | 7 – 8.4         | 7.5 to 8                | ~ 7.6 – 7.7              |
|                               | Upper estuary  | 7 – 8.4         | 8                       | ~ 7.7                    |
| Electrical conductivity (EC)  | Middle estuary | -               | ~ 1000 to 43,000 uS/cm  | ~ 3000 to 23,000         |
|                               | Upper estuary  | -               | ~ 1000                  | Up to ~ 3000             |
| Turbidity                     | Middle estuary | < 8 NTU         | < 8 to 180 NTU          | 35 to 10                 |
|                               | Upper estuary  | < 25 NTU        | 60                      | 18 to 35                 |

### Fish Habitat

A summary of the existing overall fish habitat values identified through the investigations, surveys, data and additional information gathered for each of the rivers, is presented in Tables 3 and 4 below (taken from OzFish Unlimited, September 2019) :

**Table 3: Summary of existing habitat condition for the Logan River**

# Low water levels during sampling prevented boat access for fish scans

\* Mangrove systems tend not to include large trees, therefore the % metric used here does not effectively reflect the value of riparian mangrove systems

| Reach Number  |                                | LMR01      | LMR02    | LMR03    | LMR04    | LMR05    | LMR06    |      |
|---|--------------------------------|------------|----------|----------|----------|----------|----------|------|
| Water type  |                                | Fresh      | Fresh    | Fresh    | Fresh    | Fresh    | Fresh    |      |
| Fish abundance (% based on side looking and bathymetry scans) |                                | n/a#       | n/a#     | n/a#     | n/a#     | 4%       | 1%       |      |
| Water quality   |                                | n/a        | n/a      | n/a      | n/a      | Moderate | Moderate |      |
| Riparian  | Total area vegetated (%)       | Left bank  | 62.6     | 79.8     | 69.9     | 71.3     | 72.2     | 64.2 |
|   |                                | Right bank | 62.3     | 81.8     | 78.2     | 47.4     | 69.2     | 71.5 |
|   | Total area remnant (%)         | Left bank  | 16.2     | 19.3     | 15.3     | 21.5     | 20.9     | 24.6 |
|   |                                | Right bank | 44.4     | 51.1     | 45.7     | 35       | 50.2     | 47.5 |
|   | Large potential snag trees (%) | Left bank  | 3.4      | 6.3      | 5.2      | 6.3      | 4.3      | 6.5  |
|   |                                | Right bank | 5.9      | 5.6      | 3.9      | 3.3      | 5        | 8.4  |
| Aquatic connectivity (barriers)                               |                                | None       | None     | None     | None     | None     | None     |      |
| None  |                                | 149        | 162      | 94       | 52       | 169      | 154      |      |
| Natural vs anthropogenic structures (% of natural structures) |                                | 100%       | 99%      | 100%     | 100%     | 96%      | 96%      |      |
| Longest distance between structures (approx. measure in m)    |                                | 180 m      | 300 m    | 225 m    | 570 m    | 240 m    | 300 m    |      |
| Potential nursery/Recruitment habitats (connectivity)         |                                | Medium     | Medium   | Medium   | Medium   | Medium   | Medium   |      |
| Potential land use impact                                     |                                | High       | High     | Medium   | High     | High     | High     |      |
| Community capacity for restoration                            |                                | Moderate   | Moderate | Moderate | Moderate | Moderate | Moderate |      |

| Reach Number  |                                |            | LMR07    | LMR08    | LMR09    | LMR10    | LMR11    | LMR12  | LMR13 |
|---|--------------------------------|------------|----------|----------|----------|----------|----------|--------|-------|
| Water type  |                                |            | Fresh    | Fresh    | Fresh    | Brackish | Brackish | Salt   | Salt  |
| Fish abundance (% based on side looking and bathymetry scans) |                                |            | 6%       | 6%       | 10%      | 10%      | 20%      | 14%    | 29%   |
| Water quality   |                                |            | Moderate | Moderate | Moderate | Good     | Good     | Good   | Good  |
| Riparian  | Total area vegetated (%)       | Left bank  | 72.8     | 68       | 55       | 67.5     | 83.4     | 60.1   | 66.2  |
|   |                                | Right bank | 65.9     | 62.9     | 55.8     | 53.6     | 60.8     | 71.8   | 54.6  |
|   | Total area remnant (%)         | Left bank  | 34.3     | 37.3     | 25.9     | 35.3     | 70.8     | 49.3   | 53.7  |
|   |                                | Right bank | 36.9     | 44.6     | 40.7     | 37.5     | 46.3     | 51.5   | 42.1  |
|   | Large potential snag trees (%) | Left bank  | 8.2      | 8.1      | 4.5      | 6.2      | 3.6*     | 1      | 0*    |
|   |                                | Right bank | 4.8      | 6        | 3.9      | 2.7      | 2.9*     | 0.7*   | 0*    |
| Aquatic connectivity (barriers)                               |                                |            | None     | None     | None     | None     | None     | None   | None  |
| None  |                                |            | 147      | 143      | 114      | 112      | 148      | 103    | 182   |
| Natural vs anthropogenic structures (% of natural structures) |                                |            | 88%      | 82%      | 47%      | 51%      | 66%      | 78%    | 80%   |
| Longest distance between structures (approx. measure in m)    |                                |            | 200 m    | 250 m    | 330 m    | 350 m    | 280 m    | 250 m  | 180 m |
| Potential nursery/Recruitment habitats (connectivity)         |                                |            | High     | High     | Low      | Medium   | Medium   | Medium | High  |
| Potential land use impact                                     |                                |            | High     | High     | High     | High     | High     | Medium | High  |
| Community capacity for restoration                            |                                |            | Moderate | Moderate | Moderate | Low      | Low      | Low    | Low   |

**Table 4: Summary of existing habitat condition for the Albert River**

^ Proportion is based on bathymetry survey only, as no other types of scan surveys were done in this reach

\* Mangrove systems tend not to include large trees, therefore the % metric used here does not effectively reflect the value of riparian mangrove systems

| Reach Number  |                                |            | AMR1   | AMR2     | AMR3     | AMR4     | AMR5     |
|---|--------------------------------|------------|--------|----------|----------|----------|----------|
| Water type  |                                |            | Fresh  | Brackish | Brackish | Brackish | Brackish |
| Fish abundance (% based on side looking and bathymetry scans) |                                |            | 0.7*   | 22%      | 24%      | 22%      | 32%      |
| Water quality   |                                |            | Good   | Good     | Good     | Good     | Good     |
| Riparian  | Total area vegetated (%)       | Left bank  | 68.3   | 49.5     | 69.9     | 60.2     | 61       |
|   |                                | Right bank | 65.8   | 51.6     | 67.6     | 58.1     | 67.6     |
|   | Total area remnant (%)         | Left bank  | 34     | 19.9     | 31.4     | 38.5     | 50.2     |
|   |                                | Right bank | 39.8   | 39.3     | 39.4     | 40.9     | 54       |
|   | Large potential snag trees (%) | Left bank  | 6.9    | 2.2      | 4.5      | 0.1*     | 1.1*     |
|   |                                | Right bank | 5.3    | 8        | 2.3      | 1.5*     | 0.5*     |
| Aquatic connectivity (barriers)                               |                                |            | Yes    | None     | None     | None     | None     |
| None  |                                |            | 43     | 192      | 128      | 250      | 274      |
| Natural vs anthropogenic structures (% of natural structures) |                                |            | 98%    | 90%      | 62%      | 72%      | 80%      |
| Longest distance between structures (approx. measure in m)    |                                |            | 550    | 100      | 500      | 180      | 150      |
| Potential nursery/Recruitment habitats (connectivity)         |                                |            | Medium | Medium   | Medium   | Medium   | High     |
| Potential land use impact                                     |                                |            | High   | High     | High     | High     | High     |
| Community capacity for restoration                            |                                |            | Low    | Low      | Low      | Low      | Low      |

## 5.2 Riverine Habitat Expert Panel Outcomes

A Riverine Habitat Expert Panel group was convened to review the data and to provide guidance and advice of technical matters related to fish habitat, fish biology and fisheries management. Panel members included:

- › Senior State Government Officer from the Department of Environment and Science (DES)
- › Senior Scientist from SEQWater
- › Senior State Government Officer from the Department of Agriculture and Fisheries (DAF)
- › Catchment/Environment Officer from Logan City Council
- › Catchment/Environment Officer from Gold Coast City Council
- › Catchment/Environment Officer from Scenic Rim Regional Council
- › Catchment/Environment Officer from Ipswich City Council
- › Senior Scientist from Healthy Land and Water;
- › Researcher from Griffith University
- › Researcher from the University of the Sunshine Coast
- › Member from the Logan & Albert Fish Management Association; and
- › Local residents with extensive local riverine knowledge.

### **Key findings from the Riverine Habitat Expert Panel were:**

- › As the estuarine areas are in reasonable condition and show high numbers and diversity of fish the focus should be on the freshwater areas
- › Water quality and geomorphic issues were a major problem
- › Waterway barriers were a major impediment to connectivity
- › Instream habitat could be enhanced through addition of artificial habitat/large woody debris
- › Low abundance reaches in the Logan River would require further investigation before implementing any actions in those reaches
- › Riparian vegetation was recommended for rehabilitation
- › Pest fish were acknowledged as an issue; and
- › Priority species possibly requiring special management were identified.







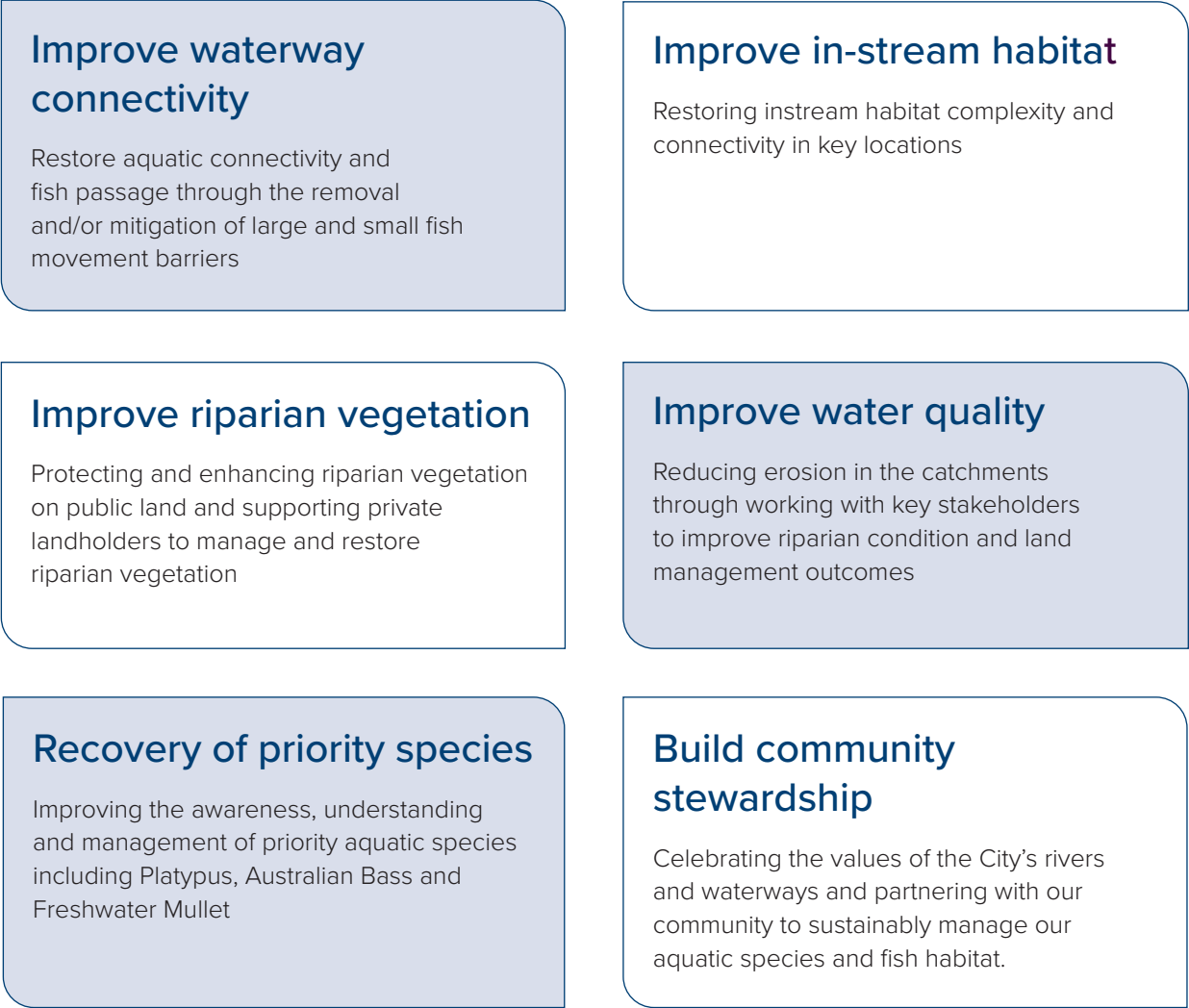
# 6. Where are we going?

This Enhancement Plan aims to achieve the vision of enhancing the long-term diversity and abundance of native fish and other aquatic fauna in the Logan and Albert Rivers by providing a road map to deliver on the strategic objectives identified. This will ensure impacts on fish habitat are mitigated and the increase of viable native fish populations in the Logan and Albert Rivers and tributaries.

# 7. Key areas of interest

The strategy for enhancing fish habitat, biodiversity and river ecosystem health of the City of Logan's waterways will focus on the following six key strategic objectives, identified in figure 2:

Figure 2: Logan and Albert Fish Habitat Enhancement Plan strategic objectives



# 8. How are we going to get there?

## 8.1 Implementation Overview

The Logan and Albert Rivers Fish Habitat Enhancement Plan 2020–2035 provides a road map for achieving improvements to the conservation of the City of Logan’s fish and aquatic species communities and recognises the importance of a healthy river system.

Delivering on the six strategic objectives will be achieved through the implementation of the actions and projects identified in the Action Plan outlined in Table 5 below.

These actions will be delivered through the development of five yearly implementation plans and success will be measured using a Monitoring, Evaluation, Reporting and Improvement (MERI) framework.

Table 5: Logan and Albert Rivers Fish Habitat Enhancement Plan Actions

| Strategic objective                       | Actions  | Measures of success   |
|---|--|---|
| <b>SO 1 Improve waterway connectivity</b> | Identification and removal/remediation of major fish movement barriers throughout the catchment, the creeks and tributaries  | <ul style="list-style-type: none"> <li>› Number of priority barriers removed/remediated in rivers</li> <li>› Number of priority barriers removed/remediated in tributaries/number of priority barriers identified for removal/remediation</li> </ul>  |
| <b>SO 2 Improve in-stream habitats</b>    | Deliver fish habitat improvement projects  | Monitoring the change in abundance and diversity of fish for each artificial habitat project: pre and post project monitoring data shows an increase in native fish abundance and diversity   |
| <b>SO 3 Improve riparian vegetation</b>   | <ul style="list-style-type: none"> <li>› Deliver riverside park riparian rehabilitation projects</li> <li>› Support landholders to undertake riparian rehabilitation and improve land management</li> <li>› Support the implementation of the Logan and Albert Riparian Weed Management Plan</li> </ul>  | <ul style="list-style-type: none"> <li>› Number of riparian rehabilitation projects</li> <li>› Area in hectares of new riparian planting undertaken by Council or by stakeholders involved in Council programs</li> <li>› Increased numbers of landholders undertaking riparian rehabilitation and improved land management</li> </ul>  |
| <b>SO 4 Improve water quality</b>         | Delivery of water quality improvement projects that reduce erosion and/or reduce sediment/pollutants entering the waterways  | Number of water quality improvement projects delivered including reporting on calculated sediment load reductions   |
| <b>SO 5 Recovery of Priority Species</b>  | Development and implementation of priority species recovery projects and integrating priority aquatic species with existing priority species management plans  | Number of priority species recovery projects delivered  |
| <b>SO 5 Build Community stewardship</b>   | <ul style="list-style-type: none"> <li>› Increase awareness and participation by the community in the understanding and management of local fish habitats</li> <li>› Partnering with Traditional Custodians to gain knowledge and understanding of traditional management methods and stories of the Albert and Logan Rivers and the sustainable management of aquatic species</li> <li>› Engaging, supporting and partnering with community including the delivery of extension services, environmental events, workshops and citizen science programs</li> </ul> | <ul style="list-style-type: none"> <li>› The number of community events undertaken and attendees</li> <li>› Number of people responding to information and education programs</li> <li>› Reduced fishing related litter at popular fishing spots</li> <li>› Number of Social Media posts</li> <li>› Number of landholders engaged in river and waterway stewardship activities</li> </ul> |

| Strategic objective                       | Measures of ecological change  | Monitoring elements   |
|---|--|---|
| <b>SO 1 Improve waterway connectivity</b> | Increased abundance and diversity of native fish species above and below the barriers following their removal/remediation  | <ul style="list-style-type: none"> <li>&gt; Monitoring fish abundance and diversity upstream and downstream of barriers before and after removal/remediation</li> <li>&gt; Cross reference with Healthy Land and Water Ecological Health Monitoring Program (HLW EHMP) data</li> </ul>                      |
| <b>SO 2 Improve in-stream habitats</b>    | Increased abundance and diversity of native fish species in priority reaches and across the area of investigation  | <ul style="list-style-type: none"> <li>&gt; Two-year summer winter re-survey of the rivers</li> <li>&gt; Cross reference with HLW EHMP data</li> </ul>  |
| <b>SO 3 Improve riparian vegetation</b>   | Measured improvement in the condition and extent of riparian vegetation  | <ul style="list-style-type: none"> <li>&gt; Two-year review of the extent and condition of riparian vegetation along the Logan and Albert Rivers within the study area and throughout the catchment</li> <li>&gt; Cross reference with HLW EHMP data</li> </ul>   |
| <b>SO 4 Improve water quality</b>         | General improvements in key water quality parameters particularly: <ul style="list-style-type: none"> <li>&gt; Reduced turbidity and sediment loads</li> <li>&gt; Improved dissolved oxygen</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Two-year broad-scale sampling across both rivers and compare with baseline data</li> <li>&gt; Annual water quality reporting from LCC's in-situ water quality monitoring network</li> <li>&gt; Cross reference with Healthy Land and Water EHMP data</li> </ul> |
| <b>SO 5 Recovery of Priority Species</b>  | Observed increase in the abundance and/or distribution of priority aquatic species   | <ul style="list-style-type: none"> <li>&gt; Undertake focal species monitoring of a two-year cycle to identify any change in abundance and distribution</li> <li>&gt; Cross reference with Healthy Land and Water EHMP data</li> </ul>  |
| <b>SO 5 Build Community stewardship</b>   | Improvements in levels of satisfaction observed in community survey results  | <ul style="list-style-type: none"> <li>&gt; Community survey undertaken every two-years to understand the community's perception and expectations around fish and fish habitat in the Logan and Albert Rivers</li> <li>&gt; Cross reference with HLW community benefit report card data</li> </ul>          |



## 9. References

- › Fish Habitat Assessment: Logan and Albert Rivers (OzFish Unlimited, September 2019)
- › Logan and Albert Rivers Fish Habitat Assessment Project – LiDAR Maps and Analysis (Airborne Insights, July 2019)
- › Logan and Albert Rivers Fish Habitat Assessment – Technical Report (InfoFish Australia Pty Ltd, November 2019)
- › Final Report – Logan and Albert Rivers Fish Habitat Implementation Plan (InfoFish Australia Pty Ltd, January 2020)
- › DERM 2010, a. Environment Protection (Water) Policy 2009: Logan River environmental values and water quality objectives. Basin No 145 (part) including all tributaries of the Logan River.
- › DERM 2010, b. Environment Protection (Water) Policy 2009: Albert River environmental values and water quality objectives – Basin No 145 (part) including all tributaries of the river.
- › Healthy Land and Water (2019). South East Queensland Report Card 2019. Retrieved from [reportcard.hlw.org.au/?currentYear=2019&show=null&action=null](https://reportcard.hlw.org.au/?currentYear=2019&show=null&action=null)
- › Moore M., McCann J., Power, T., (2018) Greater Brisbane Fish Barrier Prioritisation. Catchment Solutions Pty Limited.

**Logan City Council**

📍 150 Wembley Road  
Logan Central QLD 4114

☎ 07 3412 3412

✉ [council@logan.qld.gov.au](mailto:council@logan.qld.gov.au)

